

Abstract

A lead-free solder includes 0.05 - 5 mass % of Ag, 0.01 - 0.5 mass % of Cu, at least one of P, Ge, Ga, Al, and Si in a total amount of 0.001 - 0.05 mass %, and a remainder of Sn. One or more of a transition element for improving resistance to heat cycles, a melting point lowering element such as Bi, In, or Zn, and an element for improving impact resistance such as Sb may be added.